

**RECEIVED
CENTRAL FAX CENTER^{PATENT}****MAR 29 2007****REMARKS**

Applicants previously presented claims 25 through 47 for examination. In the above-identified Office Action, the Examiner has allowed claim 28, which Applicants appreciate with gratitude, and rejected all the other claims.

Applicants appreciate the Examiner's detailed comments in the Office Action to the above-identified application. For the reasons to be stated below, however, Applicants respectfully traverse the Examiner's rejections.

By this amendment, Applicants have (a) provided the serial numbers of applications on pages 1 and 22, as suggested by the Examiner; (b) amended claims 25, 26, 27, 37-39, 41-43, 46 and 47 to further clarify the subject matter regarded as the invention; and (c) recast allowable claim 28 in independent form by incorporating all the limitations of its base and intervening claims, as suggested by the Examiner. Accordingly, claims 25-47 remain pending. Applicants respectfully request that the Examiner reconsider the application in light of the amendments and the remarks expressed herein.

112 Rejections

The Office Action rejected claim 28 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants respectfully disagree.

The Office Action stated that it was unclear what the clause, "wherein the another mode of operation is deactivated when the speaker is attached to the clothing", was referring to.

The antecedent basis of "the another mode of operation" can be found in claim 27, which claim 28 depends on.

The Office Action suggested changing the term "deactivated" in claim 28 to "activated" because the specification at paragraph 91 states that if the phone is attached to the clothing, the speaker of the interface unit can be automatically activated. Applicants

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do not believe this is necessary. Applicants' specification at paragraph 91 teaches, for example, the following:

"For example, if the phone is attached to the clothing, the directional speaker of the interface unit can be automatically activated ..."

"For example, when the interface unit is attached to clothing (for hands-free usage), a magnet or a piece of magnetizable material in the clothing can cause the phone to operate in the hands-free mode. When the phone is detached from clothing, the magnetically-activated switch can cause the phone to operate as a normal-mode phone."

"In yet another example, activation can be based on orientation. If the interface unit is substantially in a horizontal orientation ... the phone will operate in the hands-free mode. However, if the unit is substantially in a vertical orientation ... the phone will operate as a normal-mode phone."

Among different features, paragraph 91 teaches a number of embodiments with two modes of operations. For example, activation can be based on orientation. If the interface unit is substantially in a horizontal orientation, the phone will operate in a hands-free mode. If the unit is substantially in a vertical orientation, the phone will operate as a normal-mode phone. In this example, though not explicitly stated, it should be understood that when the phone is operating in the hands-free mode (hands-free mode activated), the normal-mode is deactivated. Accordingly, Applicants respectfully request that the 112 rejections on claim 28 be reconsidered and withdrawn.

102 Rejections

Claims 25, 30-31, 33, 35-37, 39-40 and 44 were rejected under 35 USC 102(e) as being anticipated by Warren (US Patent No. 7,013,009). Applicants respectfully disagree.

Warren pertains to a microphone, a transmitter, a speaker, a receiver and a power source, all mounted to an eyeglasses frame, a hat or other article worn on the head of a

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user, for sending and receiving signals wirelessly to and from a remote cell phone or other device.¹

Regarding the speaker, Warren teaches that the speaker can be "directional so that it plays sounds toward the user's ear but does not play sounds that can be easily heard by bystanders. For example, the speaker 24 can be a conventional miniature bone-type speaker that is mounted on an ear rest 26 of one of the support arms 18 generally adjacent to the user's ear when wearing the eyeglasses 10."² "FIG. 9 shows a seventh alternative embodiment 710 The microphone 720 and the speaker 724 are built into the sheet 756 at spaced apart positions, and are directional and oriented towards the user's mouth and ear, respectively, when wearing the clip-on attachment member on glasses."³ "FIGS. 10 and 11 show further alternative embodiments of the present invention. In these embodiments, the communication components are mounted to articles that users commonly wear on their head for fashion, warmth, or other reasons.... [T]he speaker is disposed adjacent to and oriented toward the user's ear, thereby permitting the user to conveniently and privately communicate on his or her cell phone."⁴

Warren does not teach or suggest a speaker configured to be attached to a piece of clothing, and to be intentionally spaced apart from the ears of the being, so that at least a portion of ultrasonic signals is transformed into audio signals via at least a portion of the medium in the space between the directional speaker and at least one of the ears of the being

Applicants' claim 25 states that its directional speaker is configured to be attached to the piece of clothing, and to be intentionally spaced apart from the ears of the user. At least a portion of the medium in the space between the speaker and at least one of the ears of the user transforms at least a portion of the ultrasonic signals into the audio signals. Applicants submit that Warren not only does not teach or suggest such limitations, Warren teaches away from such limitations.

Warren specifically teaches that its speaker is positioned to be very close to the user's ear to permit the user to privately communicate. As an example, the speaker is a

¹ See Warren's Abstract.

² Col. 5, lines 5-10 in Warren.

³ Col. 6, line 63 to col. 7, line 4 in Warren.

⁴ Col. 7, lines 8-15 in Warren.

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bone-type speaker mounted on an ear rest 26 of one of the support arms adjacent to the user's ear. Warren further teaches that its speaker "plays sounds toward the user's ear but does not play sounds that can be easily heard by bystanders." Every one of Warren's speaker is positioned to be very close to the ear of the user.

Since Warren teaches away from limitations in Applicants' claim 25, Applicants respectfully request that the 102 rejections of claim 25, and its dependent claims 30-31, 33 and 35-37 be reconsidered and withdrawn.

Warren does not teach or suggest a communication device including two speakers, one generating audio signals from ultrasonic signals, and the other generating audio signals directly, without the need to be transformed from ultrasonic signals

Since Warren does not teach or suggest its devices having two speakers, one generating audio signals from ultrasonic signals, and the other generating audio signals directly from audio signals, without the need to be transformed from ultrasonic signals, Warren cannot teach or suggest Applicants' claim 39, and its dependent claims 40 and 44. Thus Applicants respectfully request that the 102 rejections on those claims be reconsidered and withdrawn.

103 Rejections based on Warren and Norris

Claims 26-27 and 41-43 were rejected under 35 USC 103(a) as being unpatentable over Warren in view of Norris (US Patent No. 6,151,398). Applicants respectfully disagree.

Norris pertains to an ultrasonic emitter device having broad frequency range capacity, with relatively large diaphragm displacement compared to typical electrostatic diaphragm movement. The device includes a core member to establish a first magnetic field and a movable diaphragm with a conductive coil. A variable current flows through the conductive coil to establish a second magnetic field. The first and the second magnetic fields interact to attract and repel the diaphragm at a desired frequency to

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generate ultrasonic waves.⁵ With the right modulations on the ultrasonic waves, based on the principles of acoustic heterodyning, sonic emissions can be generated.⁶

The Office Action stated that "Warren does not mention the speaker generates ultrasonic signals; which are transformed into audio signals,"⁷ which Applicants acknowledge. In an attempt to cure the deficiencies in Warren, Norris was introduced.

As explained above, regarding claims 25-27, Warren teaches away from inventions in these claims. Every one of Warren's speakers is positioned to be very close to the ear of the user.

In addition, it is not clear how one can incorporate Norris' speaker into Warren's (a) speaker 24 in Warren's FIG. 2, (b) speaker 424 in Warren's FIG. 6, (c) speaker 524 in Warren's FIG. 7, (d) speaker 624 in Warren's FIG. 8, (e) speaker 724 in Warren's FIG. 9, (f) speaker 824 in Warren's FIG. 10 or (g) speaker 924 in Warren's FIG. 11.

Regarding claims 41-42, both Norris and Warren do not teach or suggest a device with two speakers, one generating audio signals from ultrasonic signals, and the other generating audio signals directly. In addition, both references do not teach or suggest (a) a directional speaker able to be configured such that the volume of a portion of the audio signals is automatically changed depending on at least one hearing characteristic of the user, or (b) the device including a video display.

Thus, Applicants respectfully request that the 103 rejections on claims 26-27, 29, and 41-43 be reconsidered and withdrawn.

103 Rejections based on Warren and Hwang

Claim 32 was rejected under 35 USC 103(a) as being unpatentable over Warren in view of Hwang (US Publication No. 2002/0090099). Applicants respectfully disagree. Irrespective of the Office Action's rationale, since Warren does not teach or suggest independent claim 25, bringing in Hwang for a feature in dependent claim 32 would not remedy Warren's deficiency regarding independent claim 25. Thus, Applicants respectfully request that the 103 rejections on claim 32 be reconsidered and withdrawn.

⁵ See Abstract in Norris.

⁶ See col. 5, lines 55-59 in Norris.

⁷ The second paragraph on page 6 of the Office Action.

PATENT**103 Rejections based on Warren and Voroba**

Claim 34 was rejected under 35 USC 103(a) as being unpatentable over Warren in view of Voroba et al. (US Publication No. 5,819,183, hereinafter "Voroba"). Applicants respectfully disagree. Irrespective of the Office Action's rationale, since Warren does not teach or suggest independent claim 25, bringing in Voroba for additional features in dependent claim 34 would not remedy Warren's deficiency regarding independent claim 25.

103 Rejections Based on Voroba and Norris

Claim 38 was rejected under 35 USC 103(a) as being unpatentable over Voroba in view of Norris. Applicants respectfully disagree.

Voroba pertains to reducing sidetone feedback in a portable wireless telephone system that has a speaker and a microphone. Microphone output going back through the speaker (in the form of a sidetone) can create a feedback loop if the output is coupled back from the speaker through the microphone. The feedback loop can lead to oscillations. Spatial separation reduces signal coupled from the speaker to the microphone and therefore prevents oscillation. In compact telephones, such as a wrist-mounted telephone, manufacturers go through elaborate designs to maintain the spatial separation.⁸

To reduce acoustic feedback, Voroba appropriately positions the speaker and the microphone in its wireless phone, and controls the amplifier gain in the transmitter section of the phone. The wireless telephone may be configured as a wrist watch, a piece of jewelry such as a brooch or pendant, a pager/intercom, or an identification badge for an employee.⁹

As admitted in the Office Action, Voroba does not mention its speaker generating ultrasonic signals that are transformed to produce audio signals.

To try to remedy the deficiency, the Office Action introduced Norris, and the Office Action argued that "it would be obvious to one of ordinary skill in the art at the

⁸ Col. 1, lines 29-37 in Voroba.

⁹ See the Abstract in Voroba.

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time invention was made to modify above teaching of Warren with Norris, in order to provide a surprising increase in volume to the audio output signal.”¹⁰ Applicants assume the Office Action meant Voroba and Norris, instead of Warren with Norris. The following discussion is based on such an assumption.

First, it is not clear how one could incorporate the speaker in Norris into the wrist watch, the piece of jewelry such as a brooch or pendant, the pager/intercom, or the identification badge in Voroba. There are no such teachings or suggestions in Norris.

In addition, Norris and/or Voroba do not teach or suggest the volume of at least a portion of the audio signals being automatically changed depending on the sound level in the vicinity of their devices.

Thus, Applicants respectfully request that the 103 rejections on claim 38 be reconsidered and withdrawn.

103 Rejections based on Warren and Asada

Claim 45 was rejected under 35 USC 103(a) as being unpatentable over Warren in view of Asada (US Pub. No. 2002/0191807). Applicants respectfully disagree.

Irrespective of the Office Action’s rationale, since Warren does not teach or suggest independent claim 39, bringing in Asada for additional limitations in dependent claim 45 would not remedy Warren’s deficiency regarding independent claim 39.

Thus, Applicants respectfully request that the 103 rejections on claim 45 be reconsidered and withdrawn.

103 Rejections based on Warren and Gallery

Claims 46-47 were rejected under 35 USC 103(a) as being unpatentable over Warren in view of Gallery (US Patent No. 4,128,738). Applicants respectfully disagree.

As acknowledged in the Office Action, Warren does not teach a speaker with a virtual cone. To remedy the deficiency, the Office Action introduced Gallery.

Gallery pertains to a compact transmission line loudspeaker system. To support its argument that Gallery teaches a virtual cone, the Office Action cited col. 3, lines 41-48. However, in that section, Gallery teaches that “the radiator for a direct radiator speaker is

¹⁰ The second full paragraph on page 10 of the Office Action.

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cone shaped and referred to as a speaker cone. As an example, the 5 inch diameter plastic cone speaker ... performs excellently in my compact loudspeaker system." Thus, Gallery teaches a physical cone, not a virtual cone.

Moreover since Warren does not teach or suggest independent claims 39 and 25, bringing in Gallery for additional limitations in their respective dependent claims 46 and 47 would not remedy Warren's deficiency regarding independent claims 39 and 25.

Thus, Applicants respectfully request that the 103 rejections on claims 46-47 be reconsidered and withdrawn.

Regarding the remaining references cited by the Examiner, since they have not been applied against any of the claims and do not appear properly applicable thereto, no further mention thereof will be made.

Reconsideration of the application and an early Notice of Allowance are earnestly solicited. If there are any issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned representative at the telephone number listed below.

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